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COVID-19 impact on emergency department trauma visits in Eastern Province Saudi Arabia-2020: A cross-sectional descriptive study

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ABSTRACT

Background: The new pandemic, COVID-19, is posing an enormous threat to people and huge workload to emergency departments (EDs) worldwide. **Purpose:** To study the impact of COVID-19 pandemic on preventing trauma patients from visiting Emergency departments. **Methods:** A cross sectional study was conducted using an electronic survey, all the patients who live in the eastern province and had to visit the Emergency departments and either delayed or decided not to visit ED due to COVID-19 pandemic were targeted. **Results:** A total of 390 out of 809 respondents (48%) in the Eastern region suffered from an orthopedic injury during lockdown due to covid-19 pandemic. A total of 244 (62.6%) respondents were afraid to visit hospital during lockdown. The main reasons for that were being afraid of being infected with covid-19. **Conclusion:** The COVID-19 pandemic resulted in preventing orthopedic trauma patients from visiting emergency departments which delayed them from receiving proper management.

Keywords: COVID-19, emergency departments.

1. INTRODUCTION

On December 2019, the Chinese authorities announced that has spread a highly contagious virus that affects the respiratory system in Wuhan city (Naspro et al., 2020). The novel coronavirus, Severe acute respiratory syndrome - CoronaVirus - 2 (SARS-CoV-2), and the resulting infection, COVID-19, is posing an enormous threat and huge workload to emergency departments (EDs) worldwide (Wee et al., 2020). The WHO declared the COVID-19 outbreak a pandemic on March 11, 2020 (Jebril, 2020). According to the recent studies which showed a decrease visitors to the ED for a multiple disciplines over the first 7 days of the pandemic. Most of the patient feared to getting the infection, so they avoiding going to the hospital. Moreover, there



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was worri some tendency to delay the consultation with specialists even when necessary (Mantica et al, 2020). Major reduction in trauma surgery and cessation of elective non-urgent surgeries were noted during the COVID-19 pandemic. The fact that many hospital staff were relocated to care for COVID-19 patients has contributed to this reduction, which has affected Orthopedic Surgery and Trauma (Mackay et al., 2020).

As for end of May, 2020, Saudi Arabia reported more than 76,000 infected and announced mortality rate of 411. In this unprecedented scenario, ministry of health had to take action by rapidly reform their organization to cope with the situation at hand, aiming to optimize resources and minimize a further deaths and spread of the infection. As such, hospitals all over Saudi Arabia faced the challenge of reviewing their prioritization strategies regarding out-patient, in-patient services, and surgical procedures (Balhareth et al., 2020).

Aim of this study is to know the impact of pandemic on reduction non COVID-19 patients Emergency department's visits and how it affected orthopedic trauma visits specifically in eastern province Saudi Arabia. Finally, to identify the factors that prevented the Emergency department's visits.

2. METHODOLOGY

This is a cross sectional study that conducted using an electronic survey that was distributed to the residence of eastern province. All the patients who live in the eastern province and had to visit the Emergency departments and either delayed or decided not to due to COVID-19 pandemic, who agree to participate in this study will be included. COVID-19 patients, who visited Emergency department for COVID-19 complaints, did not alter their visits due to the pandemic, during the period from 27 July 2020 to 27 February 2021.

Data analysis

The data were collected, modified, coded and entered to statistical software which was IBM SPSS version 22 (SPSS, Inc. Chicago, IL). Two tailed test was done in all statistical analysis. P value less than 0.05 was considered to be statistically significant. Descriptive analysis based on frequency and percent distribution was done for all variables including orthopaedic trauma prevalence, injured person demographic data, covid related infection history, and visiting ER department for trauma care during lockdown. Cross tabulation was used to test for the distribution of visiting ER department for trauma care during covid-19 pandemic and lockdown by injured persons demographic and infection history. Pearson chi-square test was used to test for relations significance.

3. RESULTS

A total of 390 out of 809 respondents (48%) in the Eastern region suffered from injury related to orthopaedic surgery during lockdown due to covid-19 pandemic. As for those who had the injury, ages ranged from 18 to 65 years old with mean age of 30.8 ± 11.7 years old. Exact of 242 of injured respondents (62.1%) were males and 268 (68.7%) had university level of education or above. Regarding injury type, it was work related injury among 55 (14.1%) participants, Trauma with no surgical intervention (46.7%; 182), and Trauma needed surgical intervention (39.2%; 153) (table 1, figure 1, 2 & 3).

Table 1 Prevalence of injury related to orthopaedic surgery during lockdown at Eastern region, Saudi Arabia.

Injury data	No	%
Had injury related to orthopaedic surgery during lockdown		
Yes	390	48.2%
No	419	51.8%
Which type of injury?		
Work related trauma	55	14.1%
Trauma with no surgical intervention	182	46.7%
Trauma needed surgical intervention	153	39.2%
Time of that trauma during lockdown		
First period	123	31.5%
Second period	80	20.5%
Third period	187	47.9%

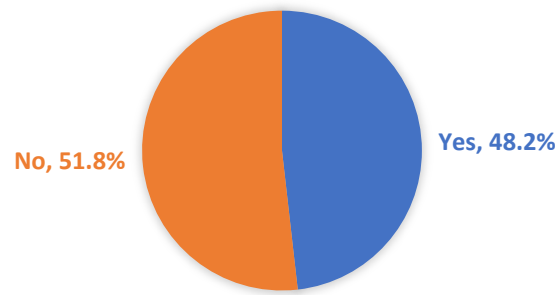


Figure 1 Had injury related to orthopaedic surgery during lockdown

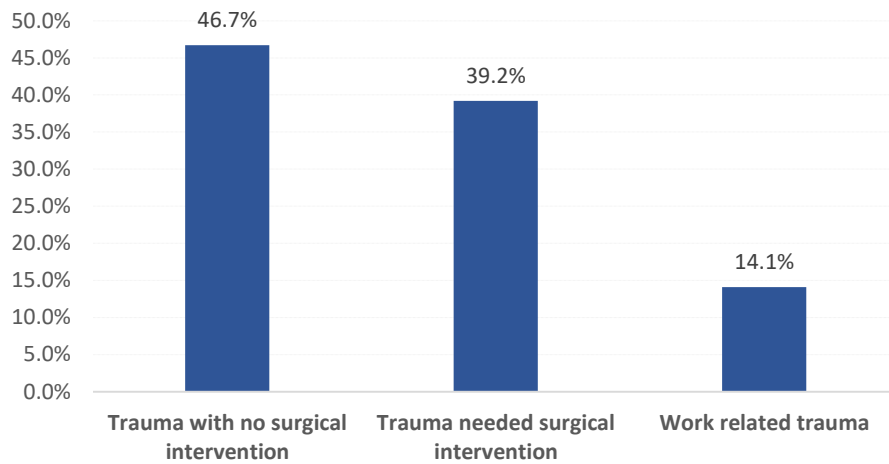


Figure 2 Type of injuries during lockdown

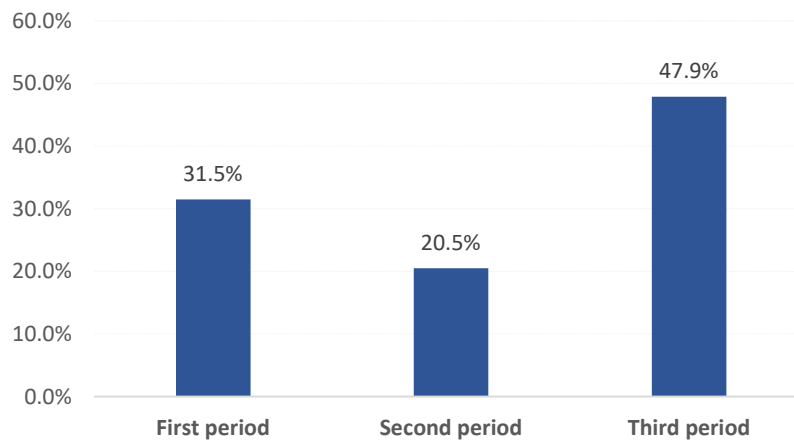


Figure 3 Time of that trauma during lockdown

Table 2, figure 4 & 5 shows medical care of injury related to orthopaedic surgery during lockdown at Eastern region, Saudi Arabia. Exact of 244 (62.6%) respondents hesitated and were afraid to visit hospital / clinic during lockdown. The main reasons for that were being afraid of being infected with covid (71.3%), followed by thinking that there was no need (12.7%), and due to lockdown (8.6%). Exact of 124 (31.8%) visit a terminal hospital because of the injury and the service provide by the terminal hospital satisfactory among 65 (52.4%) and 64 (51.6%) received adequate care. Referral to central hospital was reported by 131 (33.6%) participants. Also, ER management was evaluated in the hospital for 101 (77.1%) participants while 116 (8.5%) were referred to

orthopaedic specialist. Medical treatment with no need for surgery was reported among 260 (66.7%) participants and 76 (19.5%) needed urgent surgical intervention.

Table 2 Medical care of injury related to orthopaedic surgery during lockdown at Eastern region, Saudi Arabia.

Medical care during covid-19	No	%
Hesitated and was afraid to visit hospital / clinic during lockdown		
Yes	244	62.6%
No	146	37.4%
If yes, why		
Lockdown	21	8.6%
Afraid of being infected with covid	174	71.3%
There was no need	31	12.7%
No time was available	18	7.4%
Did you visit a terminal hospital because of the injury?		
Yes	124	31.8%
No	266	68.2%
Does the service provide by the terminal hospital satisfactory?		
Yes	65	52.4%
No	59	47.6%
Did you receive adequate care?		
Yes	64	51.6%
No	60	48.4%
Referred to central hospital		
Yes	131	33.6%
No	259	66.4%
ER management was evaluated in the hospital		
Yes	101	77.1%
No	30	22.9%
Referred to orthopaedic specialist		
Yes	116	88.5%
No	15	11.5%
What type of treatment plan has offered to you for the injury?		
Medical (no surgery)	260	66.7%
Surgery after few weeks	54	13.8%
Urgent surgery	76	19.5%

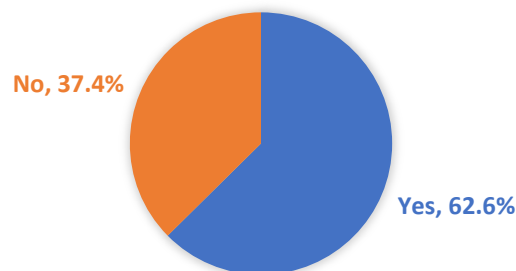


Figure 4 Hesitated and was afraid to visit hospital / clinic during lockdown

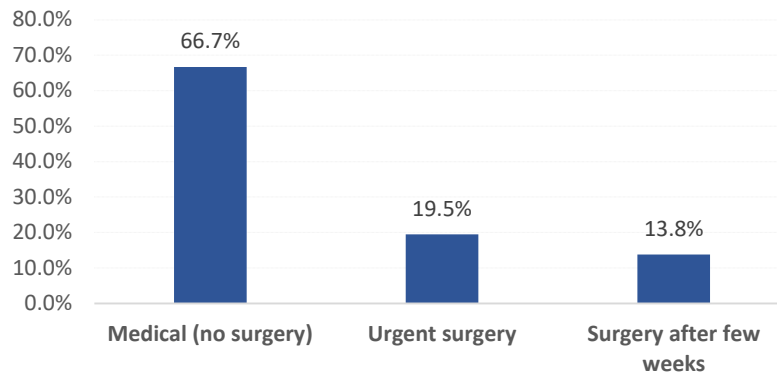


Figure 5 Types of treatment plan has offered to you for the injury

Table 3 illustrates Covid-19 infection among persons with injury related to orthopaedic surgery during lockdown at Eastern region, Saudi Arabia. Exact of 46 (11.8%) caught covid-19 infection during the outbreak and trauma time. About 34 (44.7%) persons had no symptoms while mild symptoms were detected among 32 (42.1%), and moderate symptoms that needed hospitalization among 10 (13.2%). Exact of 46 (60.5%) participants informed the treating physician about your infection. The main barriers against informing the physician were Fear of delaying trauma management (46.7%), Negligence (33.3%), and Not be punished due to careless (20%).

Table 3 Covid-19 infection among persons with injury related to orthopaedic surgery during lockdown at Eastern region, Saudi Arabia.

Covid-19 infection	No	%
Had covid infection during trauma time		
Yes	46	11.8%
No	314	80.5%
Suspected	30	7.7%
If yes, what were the symptoms		
No symptoms	34	44.7%
Mild symptoms	32	42.1%
Moderate symptoms	10	13.2%
Informed the treating physician about your infection		
Yes	46	60.5%
No	30	39.5%
If no, why?		
Fear of delaying trauma management	14	46.7%
Not be punished due to careless	6	20.0%
Negligence	10	33.3%

Table 4 demonstrates distribution of ER visits among persons with injury related to orthopaedic surgery during lockdown by participant's personal data and other factors. Exact of 41.9% of injured with ages of 50 years or more visited a terminal hospital because of the injury compared to 26.1% of those who were below the age of 20 years with recorded statistical significance ($P=.049$). Also, 41.8% of those who had work related trauma visited a terminal hospital because of the injury in comparison to 27.5% of those with mild trauma ($P=.117$). visiting a terminal hospital because of the injury for trauma care was reported by 44.7% of those needed urgent surgery in comparison to 26.5% of those who received just medical care with no need for surgery ($P=.005$).

Table 4 Distribution of ER visits among persons with injury related to orthopaedic surgery during lockdown by participants personal data and other factors.

Factors	Did you visit a terminal hospital because of the injury?				P-value
	Yes		No		
	No	%	No	%	
Age in years					.049*
18-30	54	26.1%	153	73.9%	
31-40	33	39.3%	51	60.7%	
41-50	19	33.9%	37	66.1%	
51+	18	41.9%	25	58.1%	
Gender					.183
Male	71	29.3%	171	70.7%	
Female	53	35.8%	95	64.2%	
Educational level					.708
Basic education	8	25.8%	23	74.2%	
Secondary education	28	30.8%	63	69.2%	
University / above	88	32.8%	180	67.2%	
Which type of injury?					.117
Work related trauma	23	41.8%	32	58.2%	
Trauma with no surgical intervention	50	27.5%	132	72.5%	
Trauma needed surgical intervention	51	33.3%	102	66.7%	
Time of that trauma during lockdown					.598
First period	39	31.7%	84	68.3%	
Second period	29	36.3%	51	63.8%	
Third period	56	29.9%	131	70.1%	
Had covid infection during trauma time					.111
Yes	11	23.9%	35	76.1%	
No	99	31.5%	215	68.5%	
Suspected	14	46.7%	16	53.3%	
What type of treatment plan has offered to you for the injury?					.005*
Medical (no surgery)	69	26.5%	191	73.5%	
Surgery after few weeks	21	38.9%	33	61.1%	
Urgent surgery	34	44.7%	42	55.3%	

P: Pearson X² test

*P < 0.05 (significant)

4. DISCUSSION

This research aimed to assess the visits to ER department for orthopaedic related trauma and the effect of lockdown during covid-19 pandemic in the Eastern region, Saudi Arabia. Many countries, including some European countries, Arabian countries, and the United States, faced an epidemic peak in different time's periods during 2020, which conceded the response capacity of their health care systems (Valika et al., 2020; Ferrara et al., 2020). That was resulted in resource recreation, hospital overload, and led to dramatic reductions in healthcare utilization (Davis et al., 2021; Moghadas et al., 2020).

The current study revealed that nearly half of the respondents had trauma related to orthopaedic surgery during lockdown in the Eastern region. Fortunately, 46% of those traumata were mild with no need for surgical intervention and nearly half of the trauma reported was in the third period of lockdown where there was decline in the covid cases with more accessibility of health care services. Also, the study revealed that two thirds of the respondents were hesitated and afraid to visit hospital / clinic during lockdown mainly due to their fear of catching covid-19 infection. Visiting terminal hospital where less load and availability of ER visits were recorded among one third of the traumatized cases; but only half of them received adequate care and was satisfied regarding the provided service. The respondents also reported that one third of them were referred to central hospital and 88% of those who referred to that hospital were evaluated by orthopaedic specialist. The most reported intervention was medical intervention (for two thirds of the cases) but urgent surgery was done for one fifth of those cases. Visiting ER departments due to trauma was more reported among old, aged cases than young age group which mostly may be explained by that their trauma was more serious and young age cases had sports trauma with mild severity. This can be confirmed by that nearly half of those who needed urgent surgical intervention visited the hospital compared to only one quarter of those who needed medical intervention with no surgery.

In Spain, (Nuñez et al., 2020) the authors found during the period 4 there were significant decreases in all visits to the workplace accidents, trauma emergency department, number of hospital admissions and traffic accidents. However, statistically there were no significant differences found in the number between the four periods, especially for osteoporotic hip fracture admission. The osteoporotic hip fracture admission number were 42 during the first period, 41 during the second period, 43 during the third period and 36 during the fourth period. Westgard et al., (2020) found that there was a 49.3% drop in ED visits during covid-19 peak, with overall of 35.2% as compared with 2019. Unequal declines were reported in visits by pediatrics and older patients, women, and Medicare recipients, besides presentations of syncope, cerebrovascular accidents, urolithiasis, and abdominal and back pain. Also, Hartnett et al., (2020) also reported that during the first month in the COVID-19 pandemic, ED visits were lower than the visits number during the same period during the 2019; these decreases were especially pronounced for children and females.

Besides there were many other studies have shown a considerable reduction in emergency department visits to other specialties during pandemic (Alger et al., 2020; Santi et al., 2021). Most of the patient feared to getting the infection, so they avoiding going to the hospital. The overuse of Emergency departments by low complex or non-emergency cases that could be managed by general practitioners; Moreover, there was worrisome tendency to delay the consultation with specialists even when necessary.

5. CONCLUSION

Many patients in the eastern province were affected by an orthopaedic trauma during the pandemic 62.6% respondents hesitated and were afraid to visit hospital for variable reasons most of which was being afraid of being infected with COVID-19 during their visits.

Authors' Contributions

Ahmad Nassir Boeisa (Principal Investigator) - Role: Concept and design, Literature search, Data acquisition, Data analysis and interpretation, Drafting of manuscript, Critical revising and Final approval.

Ali Adel Alsakkak (Co-Investigator) - Role: Literature search, Data acquisition, Data analysis and interpretation, Drafting of manuscript, Critical revising and Final approval.

Ahmed Waleed Alrashed (Co-Author) - Role: Literature search, Data acquisition, Data analysis and interpretation, Drafting of manuscript, Critical revising and Final approval.

Hesham Maher Alsuqair (Co-Author) - Role: Concept and design, Literature search, Data acquisition, Data analysis and interpretation, Critical revising and Final approval.

Abdulrahman Abdullah Alarfaj (Co-Author) - Role: Concept and design, Literature search, Data acquisition, Data analysis and interpretation, Critical revising and Final approval.

Informed consent

Written informed consent was obtained from all individual participants included in the study.

Ethical approval

The ethical committee approval code of the study was IRB KFHH No. (H-05-HS-056)

Funding

This study has not received any external funding.

Conflict of Interest

The authors declare that there are no conflicts of interests.

Data and materials availability

All data associated with this study are presented in the paper.

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